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ABSTRACT

The general purpose of the symposium was to connect several factors which have been studied in the psychological domain to the exercise and sport behavior domain. The assumption that factors related to adherence are facilitated through the psychological connection have been widely discussed in literature. Models allow for the development of an abstract outline specifying relations between variables and their relationship to the phenomena of interest. For example, adherence models frequently include the components of attitude and belief and take into consideration an individual's cognition or mind-set of an attribute or situation. It is noted that adherence is a complex, multidimensional factor in exercise and sport and is strongly influenced by psychology. Figures of five models are included as well as 27 references. (JD)

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"Attitudes, Beliefs, and Models in Adherence to Exercise and Sport"

Trent E. Gabert

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Symposium - Psychology of Sport Academy

Adherence & Motivation -- The Psychological Connection to Exercise and Training

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"Attitudes, Beliefs, and Models in Adherence to Exercise and Sport"

Trent E. Gabert

The general purpose of this symposia was to bridge several factors which have been studied in the psychological domain to the exercise and sport behavior domain. The assumption that factors related to adherence are facilitated through the psychological connection have been widely discussed in literature (Kenyon, 1963; Oldridge, 1979; Sonstroem, 1978; Dishman & Gettman, 1980; & Dishman, 1988), yet the special connection is not clearly understood.

It is because of the uncertainty of information in literature that models are especially important in aiding the understanding process. Models allow for developing an abstract outline specifying relations between variables and their relationship to the phenomenon of interest (Kerlinger, 1986). Thus, a plan to explain a theory, direct thought, and focus action is possible through the model representation. Although models have been developed and used for many years, recent criticism has been directed at the process in terms of inaccuracies and lack of completeness (Kerlinger, 1986). This may also be the case with models in attempting to explain adherence in exercise and sport.

Adherence models frequently include the components of attitude and belief. Attitude refers to an individuals expectations about the attributes of an object

or the consequences of a behavior, and of their evaluation of these attributes or consequences. Belief refers to an individuals cognition or mind-set of an attribute or situation (Ajzen & Fishbein, 1980). Although, attitude and belief are basic components of many models, they are individual, and influenced by perception, thus possessing an array of inter- and intra-variability.

As early as 1966, the Health Belief Model was proposed by Rosenstock (1974) and modified by Becker and Maiman (1975) to help explain behavior as related to compliance in taking medication. Rosenstock described patients as having a perceived vulnerability to a disorder, which could be exacerbated by non-compliance to the prescribed medication. Individuals were believed to weigh perceived benefits against personal and environmental barriers to compliance. Thus decisions based on real and perceived phenomena were involved (see Figure 1).

In 1978, Sonstroem investigated an individuals attraction to physical activity. Sonestroem proposed that attraction to physical activity is reinforced by self-esteem, which in turn is perceived as increasing physical activity and fitness. This spiraling influence indicating a two-directional link between activity and self-esteem, with attitude formation fueling the process, was the first model exclusively related to exercise (see Figure 2).

In the late 1970's and early 1980's, research by Dishman and colleagues began to appear which was conceptual in nature and presented a model whereby researchers could investigate single factors within the holistic or multi-dimensional -- Psychobiologic Model (see Figure 3). This model presented adherence as possessing two major components, (1) the exerciser, including biological and psychological factors, as well as (2) the situational component, including lifestyle, exercise setting, and behavioral strategy factors. One of

the most important developments from this group of researchers has been the development of the Self-Motivation Inventory (Dishman and Ickes, 1981) which has been used to study and predict joining, adherence, compliance and drop-out characteristics of many populations. Credit should be given to Dishman for his research into inventory development and control of items within a complex phenomena.

Perhaps the most prominent research model related to adherence has been the Reasoned Action Model (Fishbein & Ajzen, 1975), which has been modified to include the Theory of Planned Behavior (Ajzen & Fishbein, 1980), and has been acclaimed as including the most important psychological components of interest (Sonstroem, 1988). This model (see Figure 4) presents several behavioral and intended behavioral components according to perceived importance or weight in a quantifiable formula or recursive chain of events. The behavior is presented as caused by cognitive factors of behavioral intention, which then reflects cognitive beliefs about subjective norms. Attitudes and subjective norms (social pressure) are a function of beliefs about consequences of behavior and expectations of significant others.

The theory of planned behavior requires that intentions are based on three conditions: (1) intention and behavior must correspond in action, target, context, and time; (2) there must be stability of intention (otherwise not a good predictor of behavior); and (3) the behavior must be volitional, with little skill required, yet a certain degree of ability, opportunity, and cooperation of others required (Liska, 1984). The over-riding requirement is motivation, thus the intense interest by Dishman and colleagues to study self-motivation as a component. Behavior should not be construed as volitional or involitional, rather it is a degree of volition.

It seems that most activities involve and require other individuals, so social norm must be a dependent factor. Thus people will act according to intentions, which are both personal and social. The situation or salient belief of the situation will determine if an attitude or norm is of greater or lesser importance. Importance is based on attitude toward an evaluation of a behavioral goal, either favorable or unfavorable. Favorability is a function of an individuals expectations and evaluation of a consequence of behavior. Examples of the ways that one may look at a salient belief include: low salt diet as reducing blood pressure, and also restricting the range of approved food; asking males in a rhythmic aerobic class if they possess skill (training, consistency, form) and hearing them respond with an emphatic NO, yet what they may be trying to express is that they need skill; asking a senior citizen on welfare if they have sufficient opportunity for activity, and hearing them respond that they are old and tired, yet they may be trying to express that they would welcome more opportunities if they could afford to participate.

If associations between behavior and valued outcomes are strong, then the salient belief of the consequences should likewise be strong. Normative beliefs will in turn be influenced by significant others, which means who is saying what, or what do we think someone is saying or feeling. Perception of the significant other is critical, i.e. personality, demographics.

Riddle (1980) and Gabert and Lassetter (1987) developed activity specific inventories according to the components in the Planned Action Model -- jogging, and rhythmic aerobics. The model includes seven subsections: (1) attitude consequences, (2) belief about consequences, (3) attitude toward objects or specific activity, (4) measure of norm and indirect beliefs, (5) motivation to comply, (6) attitude towards behavior, and (7) behavioral intention. Analysis

of data collected when using the Planned Action model requires linear multiple regression, and has been used for investigating adherence to specific exercise situations, birth control practices, avoiding marijuana, seeking an abortion, and weight control.

Shephard (1985) has indicated that attitude is more important, especially over time, then social norm. The reference to time leads one to be concerned about consistency of social norms (although in reality, attitudes are also subject to change as a function of time). Shephard lists several concerns toward consistency of norms: (1) salience of beliefs (avoidance beliefs are steeper than approach beliefs); (2) new interpretation of information (perhaps what we think about a significant other is not born out over time); (3) confidence and commitment; and (4) individual differences (see Figure 5).

Significant research by other social psychologists also adds to the complexity of analyzing adherence in exercise and sport. Bandura (1977, 1982), in studying self-efficacy, has provided information about the need to consider overcoming strong habits, and also that goal setting is subject to a degree of uncertainty. We must be confident in our ability to act. Perception as related to attitude and belief will also be influenced by locus of control (Rotter, 1966; Levenson, 1972; Wallston & Wallston, 1982). We are often influenced by external forces, i.e., I may not schedule meetings during the time that I prefer to work-out, yet, if the Provost schedules a meeting, I will likely attend the meeting and not work-out! This means my overall lifestyle is dependent on others and this in turn affects my self-efficacy. Hierarchy, and where we believe we fit on the hierarchy, is often a controlling force of our behavior.

Clingman and Hilliard (1988) have tried to analyze adherence by observing "super-adherers". This concept almost approaches the ascetic factor from the

early work of Kenyon (1968), but looks specifically at personality profiles. Although more research is needed, it appears that early success in exercise or gross motor activities may be related to adult adherence patterns. Riddle (in unpublished materials) indicates that sport success as a child is either a poor predictor of exercise adherence or may even be negatively related. Riddle indicated that through casual observations, she noted that women who did not participate in competitive sport as a child or adolescent appeared to be more motivated to adhere to exercise programs as an adult.

In a recent research study by Kendzierski and Lamastro (1988) the role of attitude in exercise behavior was re-evaluated by considering subjective expected utility. Every decision we make has a certain amount of utility. Experienced weight lifters had a significantly higher number of negative thoughts toward not being able to lift than beginning weight lifters. This analysis allows individuals to utilize different alternatives to choose from. In this research it is assumed from the Fishbein and Ajzen models that few exercise attitudes are truly salient. Exercise and health behavior is actually a chain of events, very broad and complex, and participation is determined by a choice between alternatives at many links in the chain. For example, one may choose between exercising at 6:30 a.m. vs. 6:30 p.m.; exercising at home vs. at a gym; exercising alone vs. with others; wearing bike pants vs. leotards; not attending weight reduction class today vs. reading some new literature related to weight control; eating a high fiber breakfast vs. a lower fiber lunch; etc. Mediating many of the decisions are previous experiences, social norms success, and degree of commitment.

What seems to be happening in the Subjective Expected Utility concept is incompatibility to consequences, or cognitive dissonance. A participant may

perceive negative short term consequences (e.g. lactic acid build up or micro muscle tears) which are incompatible with ones initial attitudes and subjective norms. This may actually be perceived as a negative physiological state (Elkin & Leippe, 1986), which in turn subtracts from behavioral intention. As the exercise program increases in intensity and length, the novice may see more and more wrong with the program, thus causing more dissonance. To eradicate the dissonance, the individual has several choices: quit exercising, and the dissonance is eliminated; use cognitive imagery to convince the mind that the differences between attitude and social norm and cognitive dissonance aren't really that bad, and thus actually lessen the dissonance (or perhaps convince individuals to disregard reality); and third, obtain more information about ones attitudes. In effect the new information will change the initial attitude and make the attitude compatible with the results of exercise.

As we continue the analysis of past research and listen to comments from current participants, it may be worthy to add self-efficacy, self-motivation, and cognitive dissonance to the Planned Action Model (Clark & Gabert, 1989): B $\simeq$ BI = SE (W1 Attitudes + W2 Social Norm) + Self Motivation + CD. Self efficacy will change as the individual begins and adapts to the program; self motivation is important, but also changes according to the state of perception; and cognitive dissonance is important as feelings of discomfort are generated by conflicts within a person's beliefs or by inconsistencies between a person's actions and attitudes (Baron & Byrne, 1987). This must be a dynamic model, with behavioral intention (BI) increasing with time and experience. Assuming that the first few months of participation are the greatest times for recidivism, behavior and cognitive modification must begin at once. This model may not have

any greater predictive value initially than the Planned Action model, however, it may become stronger if behavior modification is successful.

Fitterling et al. (1988) have shown more success versus the earlier critical reviews toward behavior modification, i.e. Dishman et al. (1985). Factors that seem important in the recent research are:

1. Instructions: explain the exercise and what should be expected in clear and precise language.
2. Modeling: demonstrating proper methods (thus reducing injury and increasing efficiency and enjoyment).
3. Behavioral Contracts: specify both the expectations of the instructions and contingencies for adherence and recidivism.
4. Goal Setting: low, easily reached goals at first, which gradually increase in difficulty.
5. Stimulus Control: both participant and significant others are trained to create stimulants which are associated with exercising so that the stimulant would make the participant exercise.
6. Performance Feedback: performance at location and at home are recorded and publicly displayed.
7. Praise: significant others, peers, and trainers.
8. Cognitive: i.e., covert verbal strategies which help the participant to pay attention to the positive aspects of exercising. Also, self defeating thoughts should be eliminated.

About midway through this program, the subjects' criterion levels were decreased significantly. This helped avoid the lapse sometimes associated with extensive modification. Additionally, "homework" was given so that the participant was gradually weaned off of the supervised program. Reward

contingencies were gradually decreased so that praise and eventually intrinsic rewards were the only remaining reinforcements.

The most recent advance in the adherence phenomena seems to be Cognitive Behavior Therapy as presented by Fitterling (1988). When cognitive therapy is applied to reduce cognitive dissonance, and this is coupled with a slow developmental program of exercise, then adherence should theoretically improve. Only future research will be able to test this latter model as we have proposed (Clark & Gabert, 1989). As I indicated at the beginning of this paper, adherence is a complex, multidimensional factor, strongly influenced by psychology. If all of the variables in the models can be more clearly understood, only then will we be able to bridge the connection to exercise and sport in the many varied situations.

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FIGURE 1

HEALTH BELIEF MODEL

Becker & Maiman, 1975

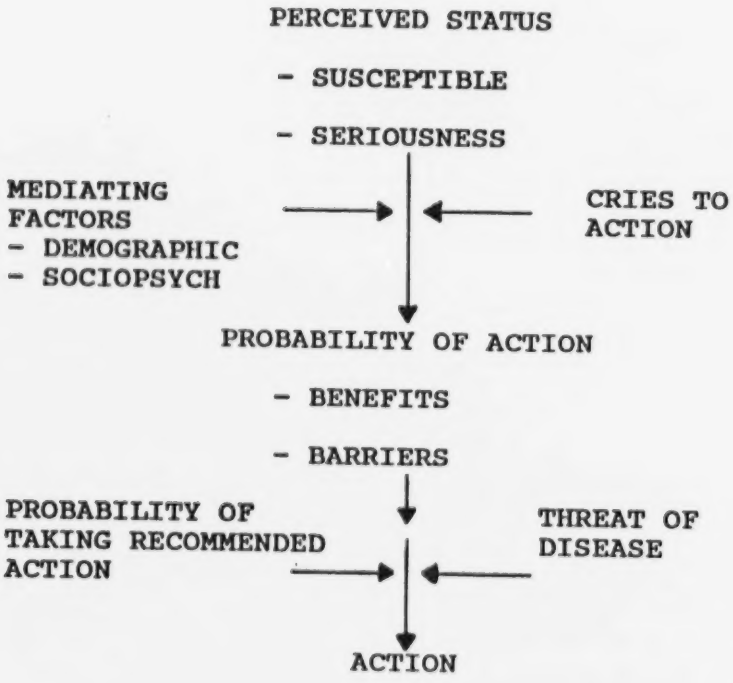

FIGURE 2

THE PSYCHOLOGICAL MODEL

Sonstroem, 1978

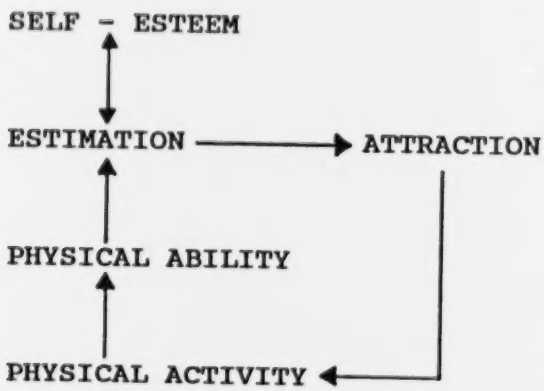

FIGURE 3

PSYCHOBIOLOGIC MODEL

Dishman & Gettman, 1980

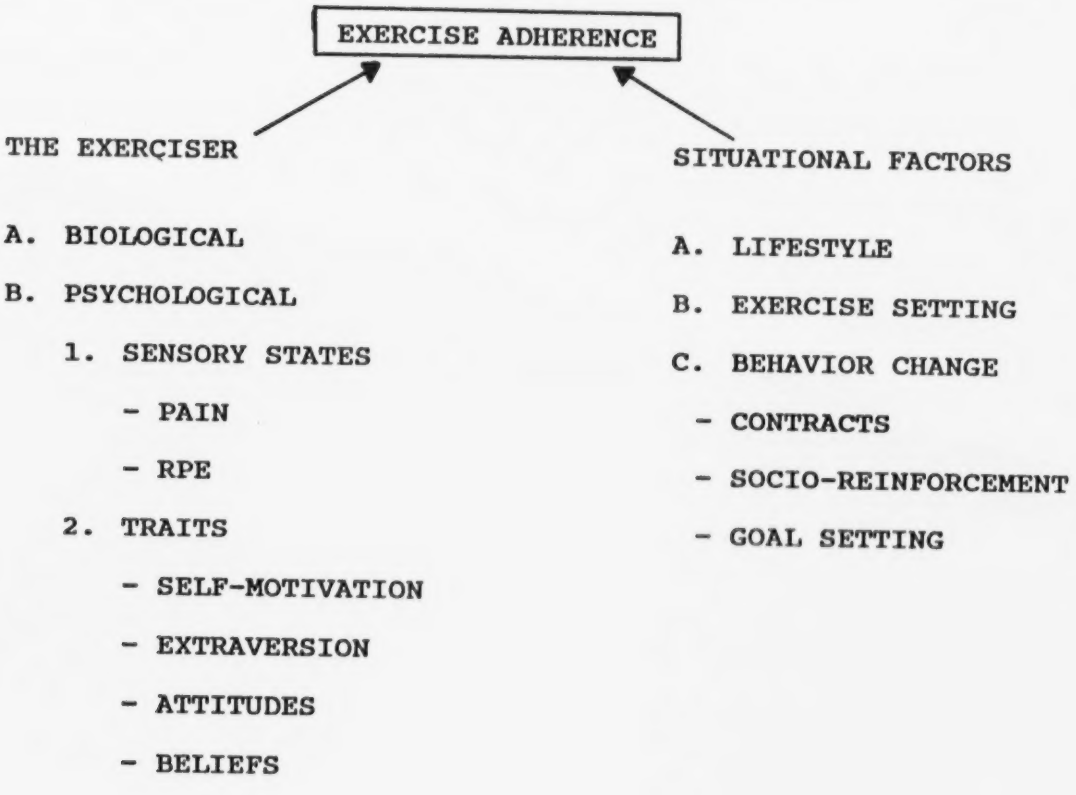

FIGURE 4

THEORY OF REASONED ACTION

Fishbein & Ajzen, 1975

$$B \cong BI = (A_B)_{W_2} + (SN)_{W_2}$$

B IS BEHAVIOR

BI IS BEHAVIOR INTENTION

A_B IS ATTITUDE TOWARD BEHAVIOR

SN IS SUBJECTIVE NORM

W_1, W_2 ARE EMPIRICAL WEIGHTS

FIGURE 5

REASONED ACTION

Shephard Modification, 1985